



## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Part 52

[EPA-R09-OAR-2016-0660; FRL-9956-27-Region 9]

Approval of California Air Plan; Owens Valley Serious Area Plan for the 1987 24-Hour PM<sub>10</sub>  
Standard

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** The Environmental Protection Agency (EPA) is proposing to approve a state implementation plan (SIP) revision submitted by the State of California and Great Basin Unified Air Pollution Control District (GBUAPCD or “District”) to meet Clean Air Act (CAA or “Act”) requirements applicable to the Owens Valley PM<sub>10</sub> nonattainment area (NA). The Owens Valley PM<sub>10</sub> NA is located in the southern portion of the Owens Valley in Inyo County, California. It is classified as a Serious nonattainment area for the national ambient air quality standards (NAAQS) for particulate matter of ten microns or less (PM<sub>10</sub>). The submitted SIP revision is the “Great Basin Unified Air Pollution Control District 2016 Owens Valley Planning Area PM<sub>10</sub> State Implementation Plan” (“2016 PM<sub>10</sub> Plan” or “Plan”). The GBUAPCD’s obligation to submit the 2016 PM<sub>10</sub> Plan was triggered by the EPA’s 2007 finding that the Owens Valley PM<sub>10</sub> NA had failed to meet its December 31, 2006, deadline to attain the PM<sub>10</sub> NAAQS. The CAA requires a Serious PM<sub>10</sub> nonattainment area that fails to meet its attainment deadline to submit a plan providing for attainment of the PM<sub>10</sub> NAAQS and for an annual emission reduction in PM<sub>10</sub> of not less than five percent until attainment of the PM<sub>10</sub> NAAQS. The EPA is proposing to approve the 2016 PM<sub>10</sub> Plan as meeting all relevant statutory and regulatory requirements.

**DATES:** Any comments on this proposal must arrive by **[Insert date 30 days from the date of publication in the Federal Register]**.

**ADDRESSES:** Submit comments, identified by docket number EPA-R09-OAR-2016-0660, at <http://www.regulations.gov>, or via email to [Vagenas.Ginger@epa.gov](mailto:Vagenas.Ginger@epa.gov). For comments submitted at Regulations.gov, follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from Regulations.gov. For either manner of submission, the EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.*, on the Web, cloud, or other file sharing system). For additional submission methods, please contact the person identified in the **FOR FURTHER INFORMATION CONTACT** section. For the EPA's full public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit <http://www2.epa.gov/dockets/commenting-epa-dockets>.

**FOR FURTHER INFORMATION CONTACT:** Ginger Vagenas, EPA Region IX, 415-972-3964, [Vagenas.Ginger@epa.gov](mailto:Vagenas.Ginger@epa.gov).

**SUPPLEMENTARY INFORMATION:** Throughout this document, the terms “we,” “us,” and “our” mean EPA.

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## **I. Background: PM<sub>10</sub> Air Quality Planning in the Owens Valley PM<sub>10</sub> Nonattainment Area**

### *A. Planning History*

The NAAQS are standards for certain ambient air pollutants set by the EPA to protect public health and welfare. PM<sub>10</sub> is among the ambient air pollutants for which the EPA has established health-based standards. By penetrating deep in the lungs, PM<sub>10</sub> causes adverse health effects including lung damage, increased respiratory disease, and premature death. Children, the elderly, and people with asthma and heart conditions are the most vulnerable.

On July 1, 1987, the EPA revised the health-based national ambient air quality standards, replacing the standards for total suspended particulates with new standards applying only to

PM<sub>10</sub>.<sup>1</sup> At that time, the EPA established two PM<sub>10</sub> standards, annual and 24-hour. Effective December 18, 2006, the EPA revoked the annual PM<sub>10</sub> standard but retained the 24-hour PM<sub>10</sub> standard.<sup>2</sup> The 24-hour PM<sub>10</sub> standard of 150 micrograms per cubic meter (µg/m<sup>3</sup>) is attained when the expected number of days with a 24-hour average concentration above 150 µg/m<sup>3</sup> per calendar year averaged over a three-year period, as determined in accordance with appendix K to 40 CFR part 50, is equal to or less than one.<sup>3</sup>

On the date of enactment of the 1990 CAA Amendments, the Owens Valley (along with many other areas meeting the qualifications of section 107(d)(4)(B) of the amended Act) was designated nonattainment by operation of law.<sup>4</sup> The Owens Valley PM<sub>10</sub> NA is located in Inyo County in east-central California. The EPA codified the boundaries of the Owens Valley PM<sub>10</sub> NA at 40 CFR 81.305.

Once an area is designated nonattainment for PM<sub>10</sub>, section 188 of the CAA outlines the process for classifying the area as Moderate or Serious and establishes the area's attainment deadline. In accordance with section 188(a), at the time of designation, all PM<sub>10</sub> nonattainment areas, including the Owens Valley PM<sub>10</sub> NA, were initially classified as Moderate. A Moderate PM<sub>10</sub> nonattainment area can subsequently be reclassified as Serious either before the applicable attainment date if the EPA determines the area cannot practicably attain the PM<sub>10</sub> NAAQS by this attainment date, or after the passage of the applicable Moderate area PM<sub>10</sub> attainment date if the EPA determines that the area has failed to attain the standard. In accordance with section

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<sup>1</sup> 52 FR 24672.

<sup>2</sup> 71 FR 61144 (October 17, 2006).

<sup>3</sup> 40 CFR 50.6 and 40 CFR part 50, appendix K.

<sup>4</sup> 56 FR 11101 (March 15, 1991).

188(b)(1) of the CAA, on February 8, 1993, the EPA determined the Owens Valley PM<sub>10</sub> NA could not practicably attain the PM<sub>10</sub> NAAQS by December 31, 1994 and reclassified the area as Serious.<sup>5</sup>

As a Serious area, the Owens Valley PM<sub>10</sub> NA acquired a new attainment deadline of no later than December 31, 2001. CAA section 188(c)(2). However, CAA section 188(e) authorizes the EPA to grant up to a 5-year extension of that attainment deadline if certain conditions are met by the state. In order to obtain the extension, the state must make a SIP submission showing that: (1) attainment by the applicable attainment date would be impracticable; (2) the state complied with all requirements and commitments pertaining to the area in the implementation plan for the area; and (3) the plan for the area includes the most stringent measures (MSM) that are included in the implementation plan of any state or are achieved in practice in any state and can feasibly be implemented in the specific area.

In its 1998 Owens Valley PM<sub>10</sub> Plan (submitted to the EPA on September 10, 1998), California requested an attainment date extension under CAA section 188(e) for the Owens Valley PM<sub>10</sub> NA from December 31, 2001 to December 31, 2006. On September 3, 1999, the EPA approved the Serious area 1998 PM<sub>10</sub> Plan for the Owens Valley PM<sub>10</sub> NA as meeting the requirements for such areas in CAA sections 189(b) and (c), including the requirements for implementation of best available control measures (BACM) in section 189(b)(1)(B) and MSM in section 188(e). In the same action, the EPA approved the submission with respect to the requirements of section 188(e) and granted California's request to extend the attainment date for

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<sup>5</sup> 58 FR 3334 (January 8, 1993).

the area to December 31, 2006. This final action and the proposal preceding it provide a more detailed discussion of the history of PM<sub>10</sub> planning in the Owens Valley PM<sub>10</sub> NA.<sup>6</sup>

On June 6, 2007, the EPA found that the Owens Valley PM<sub>10</sub> NA failed to attain the 24-hour PM<sub>10</sub> NAAQS by the applicable attainment date of December 31, 2006.<sup>7</sup> Accordingly, the State was required to submit a new plan meeting the requirements of section 189(d) by December 31, 2007.

The Governing Board of the GBUAPCD adopted the “2008 Owens Valley PM<sub>10</sub> Planning Area Demonstration of Attainment State Implementation Plan” (“2008 Plan”) on February 1, 2008. The 2008 Plan, which included a request for an attainment date extension, was submitted by the State to the EPA on June 11, 2009. The 2008 Plan was subsequently updated and superseded by the submittal of the 2016 PM<sub>10</sub> Plan, which reiterates the request for an attainment date extension and incorporates agreements reached between the GBUAPCD and the City of Los Angeles, and is the subject of this action.<sup>8</sup>

#### *B. Description of the Owens Valley PM<sub>10</sub> Nonattainment Area*

Owens Lake is located in Inyo County in east central California in the southern portion of the Owens Valley. It is part of a chain of lakes formed over 140,000 thousand years ago.<sup>9</sup> In 1913, the Los Angeles Department of Water and Power (LADWP) completed an aqueduct

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<sup>6</sup> See 64 FR 34173 (June 25, 1999) and 64 FR 48305 (September 3, 1999).

<sup>7</sup> 72 FR 31183.

<sup>8</sup> See Chapter 8 of the 2016 PM<sub>10</sub> Plan and letter from Phillip L. Kiddoo, Air Pollution Control Officer, GBUAPCD to Elizabeth Adams, Acting Air Division Director, U.S. EPA, Region 9, dated October 26, 2016.

<sup>9</sup> 2016 PM<sub>10</sub> Plan, p.7

system and began diverting the waters of the Owens River to the City of Los Angeles. By 1930, these diversions from the Owens River had drained the Owens Lake almost completely dry.<sup>10</sup>

Strong winds blowing over the surface of the dry, alkaline bed of the Owens Lake have produced among the highest measured concentrations of PM<sub>10</sub> ever recorded, including a monitored reading that exceeded 12,000 µg/m<sup>3</sup> – more than 80 times over the federal 24-hour standard.<sup>11</sup> Past data from the EPA’s approval of the 1998 PM<sub>10</sub> Plan indicated that during days when violations were recorded, 94 percent of the PM<sub>10</sub> concentrations came from the Owens Lake bed and another five percent came from re-entrained Owens Lake dust already deposited in the area.<sup>12</sup> Since our approval of the 1998 PM<sub>10</sub> Plan, PM<sub>10</sub> emissions occurring directly from the Owens Lake bed and those attributable to re-entrained Owens Lake dust deposited in the two-kilometer area surrounding the Owens Lake bed, particularly the Keeler and Olancho Dunes, have declined. Despite this reduction, the predominant source of PM<sub>10</sub> emissions contributing to nonattainment in the Owens Valley PM<sub>10</sub> NA continues to be the dry Owens Lake bed and the two-kilometer perimeter surrounding it.<sup>13</sup>

Approximately 40,000 permanent residents live in the area affected by the Owens Lake PM<sub>10</sub> emissions.<sup>14</sup> Some of these residents are members of four Tribes: the Lone Pine Paiute/Shoshone Tribe, the Fort Independence Tribe, the Big Pine Tribe, and the Bishop Tribe.

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<sup>10</sup> *Id.*, p. 8.

<sup>11</sup> *Id.*, p. S-2.

<sup>12</sup> 64 FR 34173 at 34174.

<sup>13</sup> 2016 PM<sub>10</sub> Plan, page S-4, Table S-2, and Chapter 8.

<sup>14</sup> *Id.* at S-2.

Residents and visitors to the area suffer the adverse health effects from high PM<sub>10</sub> concentrations.<sup>15</sup>

As noted previously, the State of California and the GBUAPCD submitted a PM<sub>10</sub> Plan in 1998 that the EPA approved in 1999.<sup>16</sup> The EPA recognized in approving the 1998 PM<sub>10</sub> Plan that the Owens Valley PM<sub>10</sub> NA presented one of the most challenging air quality problems nationally, requiring a reduction of PM<sub>10</sub> concentrations from almost 4000 µg/m<sup>3</sup> to the 24-hour NAAQS of 150 µg/m<sup>3</sup>. The EPA also recognized that while the origin of the PM<sub>10</sub> problem was well understood – the draining of Owens Lake by the City of Los Angeles in the early part of this century and continued LADWP withdrawals from the Owens River – the solution to the problem remained controversial.<sup>17</sup> The EPA's evaluation of the 1998 PM<sub>10</sub> Plan noted the unique complexities of the Owens Valley PM<sub>10</sub> planning process, including the competing authorities and responsibilities of the GBUAPCD to protect Owens Valley residents from the harmful effects of air pollution and those of the City of Los Angeles to provide its residents with an adequate water supply.<sup>18</sup>

Historically, there have been significant disputes between the GBUAPCD and the City of Los Angeles concerning the appropriateness, location, and extent of control measures to reduce PM<sub>10</sub> emissions from the Owens Lake bed and surrounding areas, which interfered with the adoption of a fully approvable plan. The legal history between the GBUAPCD and the City of Los Angeles is described in some detail in the EPA's proposed approval of the 1998 PM<sub>10</sub> Plan

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<sup>15</sup> *Id.*

<sup>16</sup> 64 FR 48305.

<sup>17</sup> 64 FR 34173 at 34174.

<sup>18</sup> *Id.*



and in the 2016 PM<sub>10</sub> Plan.<sup>19</sup> In summary, California legislation followed by litigation in state and federal courts resulted in a series of agreements requiring the City of Los Angeles to implement a variety of control measures to mitigate PM<sub>10</sub> emissions from the dry Owens Lake bed. The most recent iteration of these agreements, reached after extensive negotiations, is the 2014 Stipulated Judgment between the City of Los Angeles and the GBUAPCD.<sup>20</sup> It is our understanding that the 2014 Stipulated Judgment resolves all disputes between the District and the City of Los Angeles and it appears to clearly articulate the responsibilities of both parties, providing certainty and eliminating the risk of further litigation regarding the Owens Lake bed controls required for attainment and contingency measures. The 2014 Stipulated Judgment adds to and incorporates prior agreements between the parties and constitutes the foundation for the 2016 PM<sub>10</sub> Plan that we are proposing to approve in this action.<sup>21</sup>

The EPA is proposing to approve the 2016 PM<sub>10</sub> Plan because it meets the CAA requirements for Serious area plans. As was true of the 1998 PM<sub>10</sub> Plan, this 2016 PM<sub>10</sub> Plan is an important blueprint for clean air in one of the most unique and challenging PM<sub>10</sub> nonattainment areas in the United States.<sup>22</sup> Successful implementation will require continued joint efforts by the GBUAPCD and the City of Los Angeles.<sup>23</sup>

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<sup>19</sup> 2016 PM<sub>10</sub> Plan, pp. 9-12.

<sup>20</sup> *Id.*, Appendix II-1.

<sup>21</sup> *Id.*, p.12 (“The judgment requires the City of Los Angeles to implement the dust control measures ordered in 2011 and 2012 and provides for additional dust control measures up to 53.4 square miles in total for all ordered dust control areas.”)

<sup>22</sup> In 2016, the EPA bestowed its Clean Air Excellence Award for Regulatory and Policy Innovations on the GBUAPCD in recognition of the District’s development of leading methods to identify pollution source areas, analyze particulate emissions, and determine suitable pollution control measures. The EPA noted the Owens Lake project constitutes the world’s largest PM<sub>10</sub> emission control project and has led to annual air pollution reductions of 75,000 tons. *See* the EPA’s Web site: <https://www.epa.gov/caaac/clean-air-excellence-awards>.

<sup>23</sup> In 2016, the EPA bestowed its Clean Air Excellence Award for Regulatory and Policy Innovations on the GBUAPCD in recognition of the District’s development of leading methods to identify pollution source areas,

The establishment of controls on the lake bed has resulted in significant improvements to air quality in the Owens Valley. Between 1993 and 2014, the number of NAAQS exceedances decreased substantially at monitors located in the Owens Valley PM<sub>10</sub> NA. For example, the peak three-year average number of exceedances at the Dirty Socks monitor declined from 41 to 9 in 2014, at the Keeler monitor from 20 to 8, and at the Shell Cut monitor from 19 to 5.<sup>24</sup> As shown in Table 1, the 2016 PM<sub>10</sub> Plan demonstrates that PM<sub>10</sub> design concentrations are predicted to be below the NAAQS when all required controls are implemented by the City of Los Angeles and the GBUAPCD.<sup>25</sup> Through the continued efforts of the GBUAPCD and the City of Los Angeles, the 2016 PM<sub>10</sub> Plan demonstrates attainment of the 24-hour PM<sub>10</sub> NAAQS within the attainment year of 2017.

**Table 1. Decline in Owens Valley PM<sub>10</sub> Concentrations (µg/m<sup>3</sup>)**

Monitoring Site	July 2009 – June 2014 Maximum PM <sub>10</sub>	Hybrid Model 2017 Design Concentration Predictions
Dirty Socks	1,437	93
Flat Rock	871	94
Keeler	2,994	67
Lizard Tail	4,571	142
Mill Site	754	125
North Beach	1,536	67
Olancho	779	41
Shell Cut	2,149	105
Stanley	286	39

Source: 2016 PM<sub>10</sub> Plan, Tables 7-1 and 7-5.

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analyze particulate emissions, and determine suitable pollution control measures. The EPA noted the Owens Lake project constitutes the world's largest PM<sub>10</sub> emission control project and has led to annual air pollution reductions of 75,000 tons. See the EPA's Web site: <https://www.epa.gov/caaac/clean-air-excellence-awards>.

<sup>24</sup> 2016 PM<sub>10</sub> Plan, Appendix III-2, Table 1.

<sup>25</sup> *Id.*, Table 7-5.

*C. Public Notice, Public Hearing, and Completeness Requirements for SIP Submittals*

CAA section 110(a)(1) and (2) and 110(l) require each state to provide reasonable public notice and opportunity for public hearing prior to the adoption and submission of a SIP or SIP revision to the EPA. To meet this requirement, every SIP submission should include evidence that adequate public notice was given and an opportunity for a public hearing was provided consistent with the EPA's implementing regulations in 40 CFR 51.102.

Both the GBUAPCD and the California Air Resources Board (CARB) satisfied applicable statutory and regulatory requirements for reasonable public notice and hearing prior to adoption of the 2016 PM<sub>10</sub> Plan. The District provided a public comment period and conducted a public hearing on April 13, 2016, before its Board adopted the 2016 PM<sub>10</sub> Plan.<sup>26</sup> CARB provided the required public notice and opportunity for public comment prior to its May 19, 2016 public hearing.<sup>27</sup> The submission provides proof of publication of notices for the respective public hearings. We find, therefore, that the 2016 PM<sub>10</sub> Plan meets the procedural requirements for public notice and hearing in CAA sections 110(a) and 110(l).

CAA section 110(k)(1)(B) requires the EPA to determine whether a SIP submission is complete within 60 days of receipt. This section of the CAA also provides that any plan that the EPA has not affirmatively determined to be complete will become complete by operation of law six months after the date of submission. The EPA's completeness criteria are found in 40 CFR

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<sup>26</sup> *Id.*, Chapter 13 – Declaration of Clerk of the Board and Resolutions Certifying the EIR and Approving the SIP.

<sup>27</sup> State of California Air Resources Board Resolution 16-3, May 19, 2016.

part 51, Appendix V. The EPA determined the SIP submission dated June 9, 2016, to be complete on November 21, 2016.<sup>28</sup>

#### *D. CAA Requirements for PM<sub>10</sub> Serious Area Plans*

As a Serious PM<sub>10</sub> nonattainment area that failed to meet its applicable attainment date of December 31, 2006, the Owens Valley PM<sub>10</sub> NA is subject to CAA sections 188 and 189. Section 188 establishes attainment dates for Serious PM<sub>10</sub> nonattainment areas. However, when an area such as the Owens Valley PM<sub>10</sub> NA fails to attain the PM<sub>10</sub> NAAQS within the time prescribed in section 188, a new attainment date may be approved. The new attainment date is established by section 179(d)(3), which establishes that the attainment date applicable to the revision required under paragraph (1) of section 179(d) shall be the same as provided in the provisions of section 172 of the CAA. That section of the statute requires the area attain as expeditiously as practicable, but no later than five years from the date of designation.<sup>29</sup> It also includes a provision that allows the EPA to extend the attainment date for up to an additional five years (i.e., a period of no greater than 10 years) to the extent the Administrator determines appropriate, considering the severity of nonattainment and the availability and feasibility of pollution control measures.<sup>30</sup>

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<sup>28</sup> See letter from Elizabeth Adams, Acting Air Division Director, U.S. EPA Region 9 to Richard Corey, Executive Officer, California Air Resource Board.

<sup>29</sup> In accordance with CAA section 179(d)(3) and 172(a)(2)(A), the attainment deadline applicable to an area that misses the Serious area attainment date is as soon as practicable, but no later than five years from the publication date of the nonattainment finding notice. The EPA's finding that the Owens Valley PM<sub>10</sub> NA failed to attain by the Serious area nonattainment date was published on June 6, 2007.

<sup>30</sup> 42 U.S.C. 7502(a)(2)(A). See also *Ass'n of Irrigated Residents v. United States EPA*, 423 F.3d 989, 993-94 (9<sup>th</sup> Cir. 2015).

Section 189(d) provides that the state shall submit within 12 months after the applicable attainment date, plan revisions that provide for attainment of the PM<sub>10</sub> air quality standard and, from the date of such submission until attainment, for an annual reduction of PM<sub>10</sub> or PM<sub>10</sub> precursor emissions within the area of not less than five percent of the amount of such emissions as reported in the most recent inventory prepared for the area.

The general planning and control requirements for all nonattainment plans are found in CAA sections 110 and 172. More specific planning and control requirements relevant to the PM<sub>10</sub> NAAQS are found in Part D, Subpart 4, in CAA sections 188 and 189, as noted above. The EPA has issued a General Preamble<sup>31</sup> and Addendum to the General Preamble<sup>32</sup> to provide guidance to states for meeting the CAA's requirements for the PM<sub>10</sub> NAAQS. The General Preamble mainly addresses the requirements for moderate nonattainment areas and the Addendum addresses requirements for Serious nonattainment areas. The EPA has also issued other guidance documents related to PM<sub>10</sub> plans that are discussed and cited below. The specific PM<sub>10</sub> plan requirements addressed by this proposed action are summarized below.

#### 1. Emissions Inventories

CAA section 172(c)(3) requires that an attainment plan include a comprehensive, accurate, and current inventory of actual emissions from all sources of the relevant pollutants.

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<sup>31</sup> "State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990," 57 FR 13498 (April 16, 1992) (General Preamble) and 57 FR 18070 (April 28, 1992).

<sup>32</sup> "State Implementation Plans for Serious PM<sub>10</sub> Nonattainment Areas, and Attainment Date Waivers for PM<sub>10</sub> Nonattainment Areas Generally; Addendum to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990," 59 FR 41998 (August 16, 1994) (Addendum).

## 2. Attainment Demonstration and Five Percent Requirement

For Serious PM<sub>10</sub> nonattainment areas that do not attain the PM<sub>10</sub> NAAQS by the applicable attainment date, CAA section 189(d) requires the state to submit plan revisions that provide for attainment of the NAAQS and provide for an annual five percent reduction in PM<sub>10</sub> or PM<sub>10</sub> precursor emissions for each year from the date of submission until attainment.<sup>33</sup> Section 189(d) specifies that the state must submit these plan revisions within 12 months of the applicable attainment date that the area failed to meet.

## 3. Best Available Control Measures for Sources of PM<sub>10</sub>

CAA section 189(b)(1)(B) requires provisions to assure that BACM, including the best available control technology (BACT) for stationary sources, for the control of PM<sub>10</sub> shall be implemented no later than four years after the date a nonattainment area is reclassified as Serious.

When a Moderate area is reclassified to Serious, the requirements to implement reasonably available control measures (RACM), including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonably available control technology (RACT), in CAA sections 172(c)(1) and 189(a)(1)(C) remain applicable. Thus, a Serious area PM<sub>10</sub> plan must also provide for the implementation of RACM and RACT to the extent that the RACM and RACT requirements have not been satisfied in the area's Moderate area plan.

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<sup>33</sup> The EPA has previously determined that PM<sub>10</sub> precursors are not significant contributors to PM<sub>10</sub> levels in the Owens Valley PM<sub>10</sub> NA. See 64 FR 34173 at 34716 (June 25, 1999). In that rulemaking notice, the EPA noted that the contribution from secondary aerosols is insignificant. Inventory information submitted by the GBUAPCD in association with the 2016 PM<sub>10</sub> Plan also demonstrates that precursors do not contribute significantly to PM<sub>10</sub> levels that exceed the standard. See section II.D.2.b of this notice.

CAA section 189(e) requires that control requirements applicable to major stationary sources of PM<sub>10</sub> shall also apply to major stationary sources of PM<sub>10</sub> precursors, except where the Administrator determines that such sources do not contribute significantly to PM<sub>10</sub> levels that exceed the standards in the area.

#### 4. Reasonable Further Progress and Quantitative Milestones

CAA section 172(c)(2) requires that implementation plans demonstrate reasonable further progress (RFP) as defined in section 171(1). Section 171(1) defines RFP as such annual incremental reductions in emissions of the relevant air pollutant as are required by part D of title I or may reasonably be required by the Administrator for the purpose of ensuring attainment of the applicable national ambient air quality standard by the applicable date. The general RFP requirement of section 172(c)(2) applies to SIP submissions necessary to meet CAA section 189(d) for the PM<sub>10</sub> NAAQS.

In addition, CAA section 189(c)(1), which is specifically applicable to the PM<sub>10</sub> NAAQS, requires that an implementation plan contain quantitative milestones that will be achieved every three years and that will demonstrate that RFP is being met.

#### 5. Contingency Measures

CAA section 172(c)(9) requires that implementation plans provide for the implementation of specific measures to be undertaken if the area fails to make RFP or to attain the NAAQS by the attainment date applicable under part D of title I. Such measures are to take effect in any such case without further action by the State or the Administrator. The contingency measure requirement of CAA section 179(c)(9) applies to the SIP submissions necessary to meet CAA section 189(d) for the PM<sub>10</sub> NAAQS.

## 6. Transportation Conformity and Motor Vehicle Emissions Budgets

Transportation conformity is required by CAA section 176(c). Our conformity rule (40 CFR part 93, subpart A) requires that transportation plans, programs, and projects conform to state air quality implementation plans and establishes the criteria and procedures for determining whether or not they do so. Conformity to a SIP means that transportation activities will not produce new air quality violations, worsen existing violations, or delay timely attainment of the NAAQS or any interim milestone. Once a SIP that contains motor vehicle emissions budgets has been submitted to the EPA, and the EPA has found them adequate, these budgets are used for determining conformity (*i.e.*, emissions from planned transportation activities must be less than or equal to the budgets).

## II. Evaluation of the Owens Valley PM<sub>10</sub> Plan's Compliance with CAA Requirements

### A. Review of the Owens Valley PM<sub>10</sub> Nonattainment Area Emissions Inventories

The 2016 PM<sub>10</sub> Plan includes PM<sub>10</sub> emissions inventories for the Owens Valley PM<sub>10</sub> NA for the years 1999 through 2019. For the most part, the emissions data presented in the Plan were derived from the CARB 2012 and 2015 emission inventories for Inyo County and apportioned to the Owens Valley PM<sub>10</sub> NA using factors such as population, roadway miles, and land area.<sup>34</sup> The GBUAPCD calculated fugitive windblown dust emissions using a combination of modeling and data collected at monitors located around the Owens Lake bed. The unpaved road dust

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<sup>34</sup> An overview of the 2016 PM<sub>10</sub> Plan emissions inventory is provided here. For detailed results and a complete discussion of the methodologies used to produce the emissions inventories, see the following sections of the 2016 PM<sub>10</sub> Plan: Summary, S.1; Chapter 4, "PM<sub>10</sub> Emissions Inventory and Determination of Significant Sources;" and Appendix IV-1, "2016 SIP Inventory."



emissions were calculated using the GBUAPCD's emission factors. These calculations are included in Tables 3 and 4 of Appendix IV-1 of the 2016 PM<sub>10</sub> Plan.

The District has also provided an inventory of emissions of PM<sub>10</sub> precursors (*i.e.*, sulfur oxides, nitrogen oxides, volatile organic compounds, and ammonia) for a 2015 exceedance day.<sup>35</sup> In this inventory, ammonia emission estimates “were derived from Inyo County emissions that were queried from the USEPA’s 2014 National Emissions Inventory.” Estimates for the other precursors “were derived from Inyo County emissions that were queried from the CARB CEPAM Standard Emissions Tool (2013 Almanac).” In all cases, emissions were apportioned to the Owens Valley PM<sub>10</sub> NA using various factors.<sup>36</sup> The EPA previously determined that PM<sub>10</sub> precursors are not significant contributors to PM<sub>10</sub> levels in the Owens Valley PM<sub>10</sub> NA.<sup>37</sup> At that time, the EPA noted that the contribution from secondary aerosols is insignificant. The EPA proposes to find again that precursors do not play a significant part in the PM<sub>10</sub> problem in the Owens Valley PM<sub>10</sub> NA. We discuss this in more detail in Section II.D., below.

The emissions inventories provided in the Plan show that fugitive dust emissions resulting from wind erosion on the exposed Owens Lake bed, off-lake deposits of lake bed dust such as the Keeler Dunes, and open desert are by far the largest sources of PM<sub>10</sub> in the Owens Valley PM<sub>10</sub> NA. Other, much smaller sources of windblown dust include small mining facilities and the Lone Pine Landfill. The remaining sources of PM<sub>10</sub> within the Owens Valley PM<sub>10</sub> NA include wood stoves, fireplaces, unpaved and paved road dust, and vehicle tailpipe emissions.

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<sup>35</sup> See attachment to letter from Phillip L. Kiddoo, Air Pollution Control Officer, GBUAPCD to Elizabeth Adams, Acting Air Division Director, U.S. EPA, Region 9, dated October 26, 2016.

<sup>36</sup> *Id.* The metrics used to ratio emissions from Inyo County to the Owens Valley PM<sub>10</sub> NA are specified in the attachment.

<sup>37</sup> See 64 FR 34173 at 34716 (June 25, 1999)

The District also notes that prescribed burning is a source of PM<sub>10</sub> in the nonattainment area. There are no large industrial sources of PM<sub>10</sub> in the Owens Valley PM<sub>10</sub> NA.

The GBUAPCD also grouped emissions into three location-based categories: “lake bed emissions,” “near-lake emissions,” and “remaining Owens Valley NA emissions.” Emissions originating from the lake bed are included in the lake bed category. The near-lake category consists of emissions generated within a two-kilometer zone surrounding the lake bed and includes fugitive windblown dust emissions from paved and unpaved roads and open desert, emissions from other sources within two kilometers of the lake bed such as the Lone Pine Dump, and the Keeler and Olancho dunes. Emissions generated outside the two-kilometer zone are grouped in the remaining Owens Lake NA emissions category. The “Owens Lake Subarea” encompasses the lake bed and the near-lake emissions. Emissions from unpaved roads and open desert areas generated within the two-kilometer zone surrounding the lake were used in the District’s analysis of which sources contribute significantly to nonattainment, thereby allowing the District to factor in the impact of the distance between emission sources and affected monitors.

Table 2 provides a summary of the annual emissions forecast for all PM<sub>10</sub> emission source categories in the Owens Valley PM<sub>10</sub> NA for 2006, 2007, and for 2016 through 2019 (tons per year).

**Table 2. Summary of PM<sub>10</sub> Annual Emissions in the OVPA**

Year end <sup>38</sup>	Lake Bed Emissions	Near-Lake Emissions			Remaining Owens Valley NA Emissions			Total
		Keeler Dunes	Olancho Dunes	2-km Buffer (excluding dunes) <sup>39</sup>	Windblown Dust Unpaved Roads	Windblown Dust Open Desert <sup>40</sup>	Misc. Sources <sup>41</sup>	
2006	789	5,324	6,395	4,217	416	19,617	854	37,613
2007	7,448	4,476	5,011	3,143	416	19,617	854	40,964
2016	1,222	172	1,506	1,358	416	19,617	747	25,038
2017	355	41	1,093	1,180	416	19,617	747	23,450
2018	355	41	798	1,053	416	19,617	747	23,027
2019	355	41	586	962	416	19,617	750	22,726

Source: 2016 PM<sub>10</sub> Plan, Table 4-3.

The EPA is proposing to find that the 2016 PM<sub>10</sub> Plan's emissions inventories for 2006 through 2019 are comprehensive, accurate, and current inventories of actual emissions from all sources in the Owens Valley PM<sub>10</sub> NA and that these emissions inventories meet the requirements of section 172(c)(3) of the CAA and EPA guidance.<sup>42</sup> The GBUAPCD has provided a 2006 base year and future year emissions inventories to 2019, comprehensively addressing all source categories in the Owens Valley PM<sub>10</sub> NA. Consequently, we are proposing to find that the emissions inventories provided by the GBUAPCD meet the requirements of section 172(c)(3) and provide an adequate basis for the attainment demonstration as well as for the BACM and RFP demonstrations.

<sup>38</sup> Values presented represent the emissions at the end of the calendar year, after all scheduled controls are in place.

<sup>39</sup> Includes PM<sub>10</sub> emissions from Lone Pine Landfill, which equal on average approximately 60 tons per year.

<sup>40</sup> Emissions assumed constant over time.

<sup>41</sup> Miscellaneous sources include: manufacturing and industrial, service and commercial, mineral processes, metal processes, residential fuel combustion, construction and demolition, paved and unpaved road dust (activity related), windblown dust from agricultural lands, managed burning and disposal, on-road mobile, and wildfires.

<sup>42</sup> Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations. U.S. EPA, September 29, 2016 (draft).

## *B. Demonstration of Attainment*

The 2016 PM<sub>10</sub> Plan must provide a detailed demonstration (including air quality modeling) that the specified control strategy will reduce PM<sub>10</sub> emissions so that the 24-hour NAAQS will be attained as soon as practicable but no later than June 6, 2017, assuming final approval of the attainment deadline extension discussed above. CAA section 189(b)(1)(A).

### 1. Attainment Deadline

In 2007, the EPA notified the GBUAPCD that it had failed to attain the PM<sub>10</sub> NAAQS by the attainment date at the end of 2006.<sup>43</sup> The GBUAPCD has requested that the EPA extend the attainment date for the Owens Valley PM<sub>10</sub> NA for an additional 10 years.<sup>44</sup> The EPA is proposing to approve the requested attainment date extension because, considering the severity of nonattainment and the availability and feasibility of pollution control measures, the EPA believes such an extension to June 6, 2017 is warranted based on various factors, including the following.

First, the EPA acknowledges the severity of the PM<sub>10</sub> problem. As discussed above, prior to the application of controls, the Owens Valley PM<sub>10</sub> NA experienced dust storms of unprecedented magnitude that originated from the dry Owens Lake bed under certain meteorological conditions. The magnitude of these dust storms from the dry lake bed were unique within California and the United States.

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<sup>43</sup> See 72 FR 31183 (June 6, 2007).

<sup>44</sup> As discussed above, CAA section 188 and 179 allow up to a 10-year extension of the attainment date after the EPA issues a finding that a Serious PM<sub>10</sub> nonattainment area has failed to attain the NAAQS. CAA section 172(a) authorizes the EPA to extend the attainment deadline to the extent it deems appropriate for a period of no greater than 10 years from the publication of the nonattainment finding, considering the severity of nonattainment and the availability and feasibility of pollution control measure.

Second, the factors creating the dry Owens Lake bed, specifically the diversion of water in the early 20<sup>th</sup> century to the City of Los Angeles, resulted in complex legal and technical agreements for installation of control measures that were untested in kind and scope. Since approval of the 1998 PM<sub>10</sub> Plan, the GBUAPCD and City of Los Angeles have worked consistently to refine and optimize the complex set of control measures leading to substantial reductions of PM<sub>10</sub> from the dry Owens Lake bed and surrounding near-lake sources. The culmination of decades of work on this problem by the GBUAPCD and the City of Los Angeles is the Stipulated Judgment leading to the District's adoption and the EPA's approval of Rule 433 into the SIP in 2016.<sup>45</sup> Rule 433 will ensure that the mitigation measures leading to the final reductions in PM<sub>10</sub> will occur and lead to attainment of the NAAQS.

For these reasons, the EPA concurs that an extension of the attainment deadline to June 6, 2017 is warranted.

## 2. PM<sub>10</sub> Attainment Demonstration Approaches

A key part of a PM<sub>10</sub> attainment plan is the attainment demonstration. This is a demonstration by the state that the existing and planned emission control measures, in this case, the controls that have been incorporated into Rule 433 and the Keeler Dunes Project, are sufficient to result in attainment of the PM<sub>10</sub> NAAQS by the required attainment date (*i.e.*, 2017). Under CAA section 189(b)(1)(A), the attainment demonstration for a Serious nonattainment area must include air quality modeling. Please see the EPA's accompanying Technical Support

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<sup>45</sup> Because some of the controls required in the 2016 PM<sub>10</sub> Plan are required to be installed prior the end of 2017, this leaves open the possibility that some of the required controls will not be completed by June of 2017. We do not believe this will be an impediment to reaching attainment due to the seasonal nature of PM<sub>10</sub> emissions in the Owens Lake NA, which are generally elevated in the winter and spring months.

Document (TSD), located in the docket for this action, for our detailed analysis of the air quality modeling supporting the District's demonstration of attainment. In summary, the EPA's preferred PM<sub>10</sub> attainment demonstration approach is dispersion modeling, with receptor modeling or emissions inventory approaches as adjuncts. However, emissions from fugitive dust sources such as the dry Owens Lake bed are uncertain and variable in comparison with the typical industrial point sources to which dispersion modeling is usually applied. Also, in a fugitive dust-dominated area there are few if any chemical differences between the various emitting source regions within the area, so receptor modeling is of limited use. Therefore, emissions inventory-based modeling approaches have been used in fugitive dust and other PM<sub>10</sub> nonattainment areas. These include the "rollback" of monitored concentrations in proportion to emissions, sometimes in conjunction with a dispersion model in order to account for the spatial and temporal variation of emissions and their various distances from the monitor(s). In all of the approaches, projected emissions reductions due to control measures are applied to the emission source contributions, and attainment is demonstrated if the resulting concentrations are below the NAAQS.<sup>46</sup>

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<sup>46</sup> Monitored concentrations meet the 24-hour PM<sub>10</sub> NAAQS when the "design value," the expected number of daily exceedances of the NAAQS level of 150 µg/m<sup>3</sup>, is no more than one per year, 40 CFR 50.6. However, for a modeled attainment demonstration, when five years of meteorology are modeled, the 6th highest concentration is used as the "design concentration" to compare to the NAAQS level; at most five exceedances of that level are acceptable for attainment, one per modeled year. *Guideline on Air Quality Models*, 40 CFR 51 Appendix W, section 7.2.1.1, "Design Concentrations for SO<sub>2</sub>, PM<sub>10</sub>, CO, Pb, and NO<sub>2</sub>" The design concentration is sometimes referred to as the "design value," but strictly speaking, the PM<sub>10</sub> design value is the expected number of exceedances per year

### 3. Modeling in Submittal

The District used a hybrid modeling approach combining the CALPUFF (“California Puff”) dispersion model<sup>47</sup> with a monitored component. CALPUFF is used to model the effect of emissions from sources on the Owens Lake bed and the Keeler Dunes. The monitored component is used to represent the effect of other sources off the lake bed (“out-of-network”), which are not otherwise included in the CALPUFF modeling; it is a time-varying background concentration that declines over time as lake bed emissions are controlled. The District’s hybrid model and its inputs are discussed in more detail in our TSD.

The District’s model performance evaluation<sup>48</sup> of the hybrid model, which checked model predictions against monitored observations during the five-year period of July 2009 to June 2014, showed a high correlation between them and acceptable model performance.

The attainment demonstration also examined the effect of the controls through implementation of Rule 433 and controls on the Keeler Dunes that would be in place by the end of 2017, the attainment year. Each of the five meteorology years was modeled, and for a given receptor the highest sixth-high concentration taken as the design concentration. The design concentration results for each monitor site for 2014 through 2019 are shown in Table 7-5 of the 2016 PM<sub>10</sub> Plan. For 2017, the highest design concentration is 142 µg/m<sup>3</sup> and all concentrations are less than 150 µg/m<sup>3</sup>, demonstrating attainment of the PM<sub>10</sub> NAAQS.

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<sup>47</sup> Model code and documentation are available at no cost for download from <http://www.src.com/calpuff/calpuff1.htm>.

<sup>48</sup> 2016 PM<sub>10</sub> Plan, Appendix VII-1: Air Quality Modeling Report, sec. 5.

#### 4. Evaluation of Modeled Attainment Demonstration

The dry Owens Lake bed presents a unique situation for which unconventional modeling approaches may be appropriate. The EPA has consulted with the District and CARB on the modeling approach numerous times over the past decade, including during the year prior to the current Plan submittal. As discussed in detail in our TSD and in the summary below, the District's air quality modeling analysis is appropriate for this area.

##### a. Model Emissions Input

The District's Dust Identification (ID) Program, described in detail in the TSD, provides estimates of PM<sub>10</sub> emissions based on real-time measurements at numerous locations. It provides a level of detail and accuracy that is unique, and is a considerable refinement over standard emission factors, and even over locale-specific emission factors that account for soil type and wind speed. It provides a strong foundation for the emission estimates needed for a modeled attainment demonstration.

##### b. Model Choice

The District's method for estimating PM<sub>10</sub> emission factors (*i.e.*, back-calculation from monitored concentrations, also discussed in detail in the TSD), depends on good characterization of source-receptor relationships (emitting source square and monitor receptor) to determine which particular emitting areas are contributing to a given monitored concentration. A Lagrangian puff model like CALPUFF, which allows PM<sub>10</sub> emissions to follow a realistic curved trajectory between the source area and the monitor and allows different wind direction to vary by location at any given time, is appropriate for this demonstration. CALPUFF is preferable to a



steady-state Gaussian model like AERMOD, which has “straight-line” trajectories along a single wind direction within any given hour for all sources.

c. Modeling domain and background concentration.

The District’s monitoring and modeling network is focused on the lake bed and the immediately surrounding area. In order for the attainment demonstration to account for all the PM<sub>10</sub> emission sources contributing to NAAQS violations, off-lake sources must be adequately represented in the background concentration that is added to the model prediction. The District’s procedure for determining background concentration is discussed in detail in the TSD. The EPA finds the District’s reasoning and supporting documentation for the assumptions convincing.

d. Modeling receptors

By default, a grid of model receptors is used to cover much of a nonattainment area, to ensure that the NAAQS is attained everywhere in the area. In the 2016 PM<sub>10</sub> Plan, receptors are placed only along the lake bed shoreline, and further, only at monitor locations. As stated in the 2016 PM<sub>10</sub> Plan, the monitoring sites were chosen to be downwind of the largest PM<sub>10</sub> source areas, i.e. the lake bed, and so are representative of the highest expected impacts.<sup>49</sup> Because concentrations necessarily decline with distance from a non-buoyant source like fugitive dust, the EPA agrees that the highest PM<sub>10</sub> concentrations would be expected at the shoreline.

5. The EPA’s Proposed Action

In summary, the attainment demonstration is based on a unique modeling approach that incorporates real-world measurements and is well-suited to the special conditions at Owens

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<sup>49</sup> *Id.*, p.62 sec.7.1.

Lake. The EPA is proposing to find that the attainment demonstration in the 2016 PM<sub>10</sub> Plan is approvable.

### *C. Five Percent Requirement*

Section 189(d) of the CAA requires a state with a Serious PM<sub>10</sub> nonattainment area that fails to attain the PM<sub>10</sub> NAAQS by the applicable attainment deadlines to submit within 12 months after the attainment applicable attainment date, a plan showing an annual five percent reduction in emissions of PM<sub>10</sub> in the area from the date of the submission until attainment, based on the most recent inventory.

Table 4-3 in the 2016 PM<sub>10</sub> Plan provides a summary of the annual emissions forecast for sources of emissions in the nonattainment area for the years 1999 through 2019. The inventory values are derived using a combination of modeling data, monitoring results, CARB emissions inventories and control measure efficiencies.<sup>50</sup>

The 2016 PM<sub>10</sub> Plan includes a demonstration of annual five percent reductions in Chapter 8. As noted, fugitive windblown emissions, “which are tied to meteorology and are highly irregular year-to-year,”<sup>51</sup> account for most of the emissions in the Owens Valley PM<sub>10</sub> NA.<sup>52</sup> To accommodate this variability for a more stable and realistic assessment of reductions, the District used a three-year rolling average to calculate the annual reductions. Using average annual emissions from 2005 – 2007 (62,734 tpy) as the starting point for the required five percent per year reductions, the District is required to reduce emissions by 31,367 tons per year

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<sup>50</sup> *Id.*, at 34-35.

<sup>51</sup> For example, emissions totaled 109,635 tons in 2005, dropped to 37,613 tons in 2006, then rose to 73,999 tons in 2009 before beginning to consistently decline. Emissions in 2010 totaled 70,343 tons and by 2017 when attainment will be reached, emissions are projected to be 23,450 tons per year. 2016 PM<sub>10</sub> Plan, Table 4-3.

<sup>52</sup> *Id.*, p. 81.

by the attainment year (2017) to 32,367 tons per year. The GBUAPCD projects three-year annual average emissions in 2017 to be 24,783 tons per year, which *exceeds* the required amount of required reductions by 7,584 tons per year. Figure 8-1 in the 2016 PM<sub>10</sub> Plan illustrates emissions trends for various sources in the nonattainment area from 1999 through 2019 along with the three-year average total, and compares these values with a five percent reduction line.<sup>53</sup>

Although annual emissions increase in the first few years of the planning period, a steady decline begins in 2009.<sup>54</sup> The average emissions reductions catch up with the five percent per year reduction target in 2013, and subsequently exceed the required reductions beyond the projected attainment year. The EPA recognizes the unprecedented challenges faced by the District in achieving this target. In light of the unique nature of the source of emissions in the Owens Valley PM<sub>10</sub> NA, the groundbreaking technical efforts needed to characterize and control emissions from the lake bed, and the unavoidable delays in implementing controls on the lake bed caused by litigation, and in recognition of the achievement of reductions beyond those required under CAA section 189(d) after 2013, we are proposing to approve the five percent demonstration in the 2016 PM<sub>10</sub> Plan.

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<sup>53</sup> The EPA believes the use of 2007 as the baseline for five percent reductions is reasonable and consistent with Congress' intent. Section 189(d) states that plans are due *within 12 months of the missed attainment deadline* and that the plans should provide for annual five percent reductions *from the date of the submission until attainment*. The attainment deadline for the Owens Valley PM<sub>10</sub> NA was December 31, 2006. 64 FR 48305 (September 3, 1999). Accordingly, a submittal to fulfill section 189(d) was due by December 31, 2007. Arguably, some of the reductions in the RFP demonstration occurred outside the literal time frame specified by Congress (i.e., "the date of the submission" of the Plan) because the 2016 PM<sub>10</sub> Plan was not submitted until June 9, 2016. The EPA believes that it is appropriate and consistent with Congress's intent for expeditious attainment of the NAAQS that we consider reductions that occurred prior to the submittal of the 2016 PM<sub>10</sub> Plan.

<sup>54</sup> The District notes that a substantial portion of the total reductions achieved beginning in 2006 and forecast through 2017 occur from 2010 to 2014 with the implementation of the 2008 SIP Control Areas and Phase 8 Control Area, which are described in Sections 6.2.1.4 and 6.2.1.5 of the Plan. 2016 PM<sub>10</sub> Plan, p 85.

#### *D. BACM/BACT and Adopted Control Strategy*

##### 1. Background

Section 189(b)(1)(B) of the CAA requires areas designated as Serious nonattainment for PM<sub>10</sub> to implement BACM and BACT<sup>55</sup> on all significant sources of direct PM<sub>10</sub> and PM<sub>10</sub> precursors. The CAA does not define a BACM-level of control for specific sources. In our guidance for Serious PM<sub>10</sub> nonattainment area plans, the EPA defined BACM to be, among other things, the maximum degree of emission reduction achievable from a source or source category which is determined on a case-by-case basis, considering energy, economic and environmental impacts.<sup>56</sup> Consistent with the General Preamble Addendum, a BACM analysis should include the following elements for the Owens Valley PM<sub>10</sub> NA:

- Preparation of an inventory of PM<sub>10</sub> sources;
- Identification of source categories having a greater than *de minimis* impact on ambient PM<sub>10</sub> concentrations;
- Comparative analysis of the controls implemented in the Owens Valley PM<sub>10</sub> NA and BACM in other Serious nonattainment areas for significant source categories; and
- Evaluation of reducing emissions from a particular source category and costs associated with controls.

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<sup>55</sup> BACT, which applies to stationary sources, is a subset of BACM.

<sup>56</sup> See 59 FR 41998, 42010 (August 16, 1994).

## 2. Analysis

The GBUAPCD BACM analysis, which addresses the four elements described in the General Preamble Addendum,<sup>57</sup> is summarized below. The GBUAPCD's Rule 433 contains the BACM control measures for the Owens Lake bed. The EPA approved Rule 433 into the SIP on November 10, 2016.<sup>58</sup> In addition, the GBUAPCD is directly implementing controls at the Keeler Dunes as discussed further below.

### a. Inventory

The emissions inventories included in the 2016 PM<sub>10</sub> Plan and in additional information submitted on October 26, 2016 are summarized and evaluated in section II.A, above. As noted previously, the EPA is proposing to find that the 2016 PM<sub>10</sub> Plan's emissions inventories for 2006 through 2019 are comprehensive, accurate, and current inventories of actual emissions from all sources in the Owens Valley PM<sub>10</sub> NA and that these emissions inventories meet the requirements of Section 172(c)(3) of the CAA and the EPA.

### b. Identification of Source Categories

The General Preamble Addendum provides that BACM are required for all categories of sources in Serious areas unless the State adequately demonstrates a particular source category does not contribute significantly to nonattainment of the NAAQS. A source category is presumed to contribute significantly to a violation of the 24-hour PM<sub>10</sub> NAAQS if its PM<sub>10</sub> impact at the location of expected violation would exceed 5 µg/m<sup>3</sup>.<sup>59</sup>

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<sup>57</sup> 2016 PM<sub>10</sub> Plan, page 38.

<sup>58</sup> Acting Regional Administrator Alexis Strauss signed the EPA's final action approving Rule 433 on November 10, 2016. It will be published in the Federal Register in the near future.

<sup>59</sup> 59 FR 41998, 42011.

To determine which sources contribute significantly to PM<sub>10</sub> violations and are therefore subject to BACM level controls, the GBUAPCD selected a day on which measured levels of particulate approached the level of the standard and the predominant source of emissions was characterized as “non-lake.” The District noted that its choice is conservative because it “produces a small *de minimis* emissions level and makes it feasible for non-lake sources to be considered significant.”<sup>60</sup> By dividing the threshold value for a significant contribution (*i.e.*, 5 µg/m<sup>3</sup>) by ambient level of PM<sub>10</sub> on the chosen day (150.1 µg/m<sup>3</sup>), Great Basin calculated a *de minimis* factor of 3.33 percent.

The GBUAPCD provided an inventory of sources of precursor emissions that we used to determine if sources of precursors contribute significantly to ambient levels of PM<sub>10</sub> exceeding the standard in the Owens Valley PM<sub>10</sub> NA. Because of the gaseous nature of precursor emissions, these compounds would have the potential for long distance transport, so emissions from the entire nonattainment area are considered. Adding together emissions of PM<sub>10</sub> from within the near-lake area on a near exceedance day and precursor emissions from throughout the nonattainment area results in a total of 535.37 tons per day of emissions. Multiplying this number by 3.33 percent yields a *de minimis* threshold of 17.8 tons per day.

In determining whether sources of precursors contribute significantly to PM<sub>10</sub> levels, we made two conservative assumptions. First, we assumed that all precursor emissions would result in the formation of PM<sub>10</sub>. Second, we compared the total emissions for all precursors (*i.e.*, 4.7 tons per day), rather than emissions of each precursor from each source category, to the *de minimis* threshold of 17.8 tons per day. Given total precursor emissions are far below the *de*

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<sup>60</sup> 2016 PM<sub>10</sub> Plan, page S-3.

*minimis* threshold, we conclude precursors do not contribute significantly to PM<sub>10</sub> levels in the Owens Valley.

To determine which sources of direct PM<sub>10</sub> are significant, the District multiplied the near-exceedance day PM<sub>10</sub> emissions inventory (530.65 tons per day<sup>61</sup>) by the *de minimis* factor, yielding a *de minimis* emissions threshold of 17.7 tons per day.<sup>62</sup>

Table 3 below summarizes the sources of PM<sub>10</sub> emissions in the Owens Lake subarea, on the analyzed day.<sup>63</sup>

**Table 3. PM<sub>10</sub> Exceedance Day Inventory for Owens Lake Subarea (2 km buffer)**

Category	2015 (tons per day) <sup>64</sup>
Fugitive Windblown Dust from Exposed Lake Beds	45.30
Fugitive Windblown Dust from Keeler Dunes	169.20
Fugitive Windblown Dust from Olancho Dunes	312.00
Other sources within the Owens Lake Subarea, including mineral processing, paved and unpaved road dust, and the Lone Pine Landfill <sup>65</sup>	4.15
TOTAL	530.65

Using the 17.7 tons per day threshold, the GBUAPCD identified three significant PM<sub>10</sub> source categories in the OVPA:

- Fugitive windblown dust from exposed lake bed.

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<sup>61</sup> This number does not include precursor emissions, which is acceptable because precursors do not significantly contribute and excluding precursor emissions results in a slightly lower (more conservative) threshold for significance.

<sup>62</sup> 2016 PM<sub>10</sub> Plan, p. 4.

<sup>63</sup> The GBUAPCD notes that “monitoring and modeling analyses indicate that emissions from off-lake sources more than two kilometers away do not have an impact on achieving attainment” and cites a similar approach taken in the “Five Percent Plan for PM<sub>10</sub> for the Maricopa County Nonattainment Area.” *Id.* Page 56.

<sup>64</sup> *Id.* Table S-2.

<sup>65</sup> BACT, which applies to stationary sources, is generally not applicable within the Owens Valley PM<sub>10</sub> NA where all PM<sub>10</sub> sources except for wind erosion from the dry Owens Lake bed and the dune systems are *de minimis*.

- Fugitive windblown dust from Keeler Dunes.
- Fugitive windblown dust from Olancho Dunes.

Based on this analysis, the District focused its BACM demonstration on the controls required on the lake bed and on the Keeler Dunes.<sup>66</sup> According to the GBUAPCD, the Olancho dunes are primarily natural. If PM<sub>10</sub> violations are attributed to these dunes, the violations will be treated as natural events and a Natural Events Action Plan will be developed and implemented in accordance with the EPA's guidance and rules on Exceptional Events.<sup>67</sup> Further, emissions from the Olancho Dunes are expected to be reduced by about 2090 tons per year as the result of lake bed controls, which will reduce sand migration from nearby areas and allow redeposited lake bed particulate to winnow away until emissions are those of a natural dune system.<sup>68</sup>

#### c. Comparative Analysis

To fulfill the requirement for a comparative analysis, the GBUAPCD searched for requirements for analogous lake bed and dune sources in other PM<sub>10</sub> nonattainment areas including Imperial County, the San Joaquin Valley, Maricopa County (Phoenix area), the South Coast, and Clark County (Las Vegas area). However, the District was unable to identify any analogous active controls for these kinds of sources in other areas. The District concludes that “these measures are unique in the US and are, by definition, the most stringent requirements for these sources.”<sup>69</sup> A description of the lake bed and dune controls follows.

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<sup>66</sup> The GBUAPCD has investigated the history and morphology of the Keeler Dunes and determined that the drying of the Owens Lake bed resulted in the expansion of the pre-existing, natural dune area. 2016 PM<sub>10</sub> Plan, page 61.

<sup>67</sup> *Id.* See Appendix V-1, “OVPA 2016 SIP BACM Assessment,” Appendix E, “2013 GBUAPCD Board Order No. 130916-01,” p.7.

<sup>68</sup> *Id.*, pp. 34 and 56.

<sup>69</sup> *Id.* See Appendix V-1, “OVPA 2016 SIP BACM Assessment,” p. 22.



i. Lake Bed Controls

Lake bed controls are set forth in the GBUAPCD's Rule 433, which is included in the 2016 PM<sub>10</sub> Plan. The EPA has approved Rule 433 into the SIP in a separate action.<sup>70</sup> Rule 433 requires the control measures described in Chapter 6 of the 2016 PM<sub>10</sub> Plan and summarized in our TSD to be implemented by the City of Los Angeles on various portions of the dry Owens Lake bed.<sup>71</sup> In brief, Rule 433 requires the City of Los Angeles to conduct shallow flooding through application of water, install managed vegetation or a gravel blanket, or in some cases use tillage with a brine back-up. These control measures typically result in a 99 to 100 percent control efficiency. Beginning in 2001, lake bed controls have been constructed in phases as modeling and empirical evidence have demonstrated the need for additional controls. Rule 433 requires ongoing implementation of previously established control requirements and includes an enforceable implementation schedule for the most recent phase of controls, with all controls in place in the attainment year of 2017.

ii. Dune Controls

The District is in the process of implementing a dust control project on Keeler Dunes that involves the placement of approximately 82,000 straw bales and planting of approximately 246,000 native shrubs.<sup>72</sup> The goal of the project is to create a stable, non-emissive, low-impact vegetated dune system that requires minimal resources to maintain. The placement of the straw bales was completed in 2015 and plantings are scheduled to be complete by the end of 2016. At

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<sup>70</sup> 81 FR 62849 (September 13, 2016); final approval signed November 10, 2016.

<sup>71</sup> For more detail on the Owens Lake bed controls, see Chapter 6 of the 2016 PM<sub>10</sub> Plan and our TSD. Some of these control measures are also described in our proposed approval of the 1998 Plan (64 FR 34173, June 25, 1999).

<sup>72</sup> As noted above, no additional active controls are anticipated for the Olancho Dunes.

full build-out, the GBUAPCD projects the project will reduce PM<sub>10</sub> emissions by approximately 95 percent and bring the community of Keeler into compliance with state and federal PM<sub>10</sub> standards.<sup>73</sup> Implementation of this project is made federally enforceable by approval of the 2016 PM<sub>10</sub> Plan, which includes Resolution 2016-03 wherein the Governing Board of the GBUAPCD authorizes and commits the District to complete the Keeler Dunes Project as set forth in the Plan.

In the context of its environmental review of the Keeler Dunes Project, the District considered alternatives for reducing the windblown dust from the Keeler Dunes, such as covering with geotextile fabric and gravel or excavation and removal of the dunes, but found them to be infeasible.<sup>74</sup>

d. Evaluation of Reducing Emissions from Windblown Dust and Associated Costs.

The GBUAPCD estimated cost and emission impacts of the exposed lake bed and Keeler Dune controls as shown in Table 4 below :

**Table 4. Impact Analysis: Control Effectiveness, Cost Information, and Cost Effectiveness<sup>75</sup>**

Source Category (and Windblown Dust Controls)	Average Annual Emissions (tons)	Control Effectiveness	Costs	Cost Effectiveness
Dry Lake Bed (varied controls, including shallow flooding, gravel blanket, and managed vegetation. See Rule 433.)	2006: 73,174 2010: 43,325 2014: 1,936	Up to 99 percent depending on control and location	\$145.8M (annualized) for 2016 SIP	\$2,390/ton
Off-Lake Dunes	3,309	95 percent based on	\$700,000	\$222/ton

<sup>73</sup> 2016 PM<sub>10</sub> Plan, pp.19 and 50 - 53

<sup>74</sup> *Id.* See Appendix V-1, “OVPA 2016 SIP BACM Assessment,” pp. 16-17.

<sup>75</sup> *Id.* See Appendix V-1, “OVPA 2016 SIP BACM Assessment,” p. 21.

(straw bales and re-vegetation)		straw bales with future shrub establishment.	(annualized) for straw bales and revegetation with watering	
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### 3. EPA Evaluation and Proposed Action

In the 2016 PM<sub>10</sub> Plan, the GBUAPCD has provided documentation on Rule 433 and on the Keeler Dunes Project, quantifying the cost of construction, materials, operation, and maintenance, and examining other factors such as energy and environmental impacts. The EPA agrees that adequate time must be allowed to fully implement Rule 433 successfully because the control measures in the Rule are uniquely vast in scale, materials, and required construction activity. Rule 433 establishes an aggressive, phased, implementation schedule that we are proposing to find is as expeditious as practicable. We also find that the implementation schedule for the Keeler Dunes project is as expeditious as practicable.

The EPA concludes that the 2016 PM<sub>10</sub> Plan demonstrates:

- 1) Wind erosion from the dry Owens Lake bed (and secondarily, from the Keeler Dunes, which have expanded as a result of redeposited particles transported from the dry lake bed<sup>76</sup>), is the predominant source of PM<sub>10</sub> emissions that cause or contribute to PM<sub>10</sub> violations in the Owens Valley PM<sub>10</sub> NA and that applying BACM to other source categories would not contribute significantly to achieving the NAAQS as expeditiously as practicable;

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<sup>76</sup> *Id.*, page 61.

- 2) Rule 433's control measures to reduce windblown dust from the dry Owens Lake bed and area immediately surrounding the bed of Owens Lake are unique and satisfy the requirement for BACM.
- 3) The goal of the Keeler Dunes Project is to create a stable self-sustaining low-impact vegetated dune system to reduce wind erosion. Implementation of these controls represents BACM since there are no analogous dust control projects or alternative controls for this type of source; and
- 4) No analogous source has been identified to support the economic and technological feasibility of any alternative or additional measures for the control of significant sources of wind erosion emissions in the Owens Valley PM<sub>10</sub> NA.

*E. Reasonable Further Progress/Quantitative Milestones*

CAA section 189(c) requires that PM<sub>10</sub> nonattainment areas must include quantitative milestones that are to be achieved every three years and that show RFP toward attainment by the applicable attainment deadline. Quantitative milestones may be met in a variety of ways, including by establishing a percent implementation of various control strategies, by percent compliance with implemented control measures, or adherence to a compliance schedule.<sup>77</sup> Prior to submittal of the 2016 PM<sub>10</sub> Plan, lake bed controls were established that yielded significant emissions reductions, as reflected in the annual emissions inventory<sup>78</sup> and illustrated in Figure 8-1 of the Plan. Unsurprisingly, given the variable nature of the emissions sources and the periodic

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<sup>77</sup> 59 FR 41998 at 42016.

<sup>78</sup> 2016 PM<sub>10</sub> Plan, Table 4-3.

delays due to disputed control measures, the decline is not linear; however, as noted previously, reductions sufficient to provide for attainment will be achieved within the required timeframe. Under the circumstances, we find that the progress achieved prior to the 2016 adoption of the Plan is reasonable.

The GBUAPCD's Rule 433 and the Keeler Dunes Project establish requirements for additional controls that will be completed in 2017 and that provide for additional emissions reductions. Under Rule 433, the City of Los Angeles must continue to implement all control measures that are already in place,<sup>79</sup> and must implement Phase 9/10, which requires the control of an additional 3.62 square miles of the Owens Lake bed by December 31, 2017. These control requirements include enforceable schedules for implementation of the specified control measures, and the Plan includes quantification of the emissions reductions that will be achieved by implementation of the control measures.

In its discussion of the requirement for quantitative milestone reports, the District noted that the remaining milestone for the 2016 PM<sub>10</sub> Plan is the completion of the Phase 9/10 dust controls, which are enforceable through Rule 433. In other words, the final quantitative milestone for the 2016 PM<sub>10</sub> Plan is 100 percent implementation of the required controls. The GBUAPCD commits to submitting a report to the EPA by April 1, 2018, as required by Section 189(c)(2) of the Act, that demonstrates RFP thorough the achievement of the December 31, 2017 quantitative milestone.

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<sup>79</sup> These areas consist of the 2003 Dust Control Area (29.8 square miles), the 2006 Dust Control Area and Channel Area (13.2 square miles), and the Phase 8 area (2.0 square miles).

The EPA proposes to approve the enforceable schedule in Rule 433 and commitment for completion of the Keeler Dunes Project in 2016 as meeting the RFP requirements of CAA section 189(c).

#### *F. Contingency Measures*

The CAA requires that the 2016 PM<sub>10</sub> Plan include contingency measures to be implemented if the area fails to meet progress requirements or fails to attain the NAAQS by the applicable deadline. These contingency measures should take effect without requiring further action by the state or the EPA and should be fully implemented as expeditiously as practicable.<sup>80</sup> Contingency measures should also provide for emissions reductions equivalent to one year's average increment of RFP.<sup>81</sup>

Because it is not possible to predict which areas of the lake bed may become emissive and cause a failure to meet progress requirements or to attain the NAAQS, Rule 433 requires the District to evaluate at least once per calendar year whether additional areas of the lake bed require controls. If the GBUAPCD determines that the Owens Valley PM<sub>10</sub> NA has not met progress requirements or will not timely attain, Rule 433 requires the implementation of BACM control measures on up to an additional 4.78 square miles of the Owens Lake bed as expeditiously as practicable. The implementation of the contingency measure in Rule 433 does not require additional rulemaking actions or public hearings. The EPA has concluded, therefore, that the contingency measure included in the 2016 PM<sub>10</sub> Plan through adopted Rule 433 provides for the implementation of contingency measures as expeditiously as practicable.

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<sup>80</sup> 59 FR 41998 at 42015.

<sup>81</sup> *Id.*

The GBUAPCD has demonstrated that the dry lake bed is the overwhelming contributor the exceedances of the PM<sub>10</sub> NAAQS, both through PM<sub>10</sub> originating directly from the lake bed, or from lake bed particles that have been deposited nearby, which then become a secondary source of particulate (e.g., the Keeler Dunes).<sup>82</sup> Therefore, we have focused our analysis on the control of emissions emanating from the lake bed in assessing whether the contingency measure in the 2016 PM<sub>10</sub> Plan provides a year's worth of average RFP increment.

Determining the amount of emissions reductions needed for contingency measures (i.e., a year's worth of reductions) presents a unique challenge in the Owens Valley PM<sub>10</sub> NA due to the nature of the lake bed and the meteorological influence on emissions, which leads to a degree of variability in annual emissions that is somewhat independent of the application of controls. For this reason, we have used the annual average area of the lake bed on which controls are required for the period of 2007 (the year the EPA made a finding of failure to attain) through 2017 (the attainment year) as a surrogate for the annual amount (tons) of emissions reductions required. This results in an annual average area of 1.8 square miles.<sup>83</sup> Rule 433 provides for the implementation of controls on an additional 4.78 square miles of lake bed, which is more than double the annual average. We therefore conclude the contingency measure provisions in Rule 433 satisfy the contingency measure requirements under CAA section 172(c)(9).

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<sup>82</sup> For additional discussion, see Chapter 7 of the 2016 PM<sub>10</sub> Plan and the attainment demonstration analysis in the TSD for this action.

<sup>83</sup> A total of 18.2 square miles will be controlled in 10-year period of 2007 through 2017 (the 2006 Dust Control and Channel Area encompasses 13.2 square miles; the Phase 8 Area encompasses 2.0 square miles; the Phase 9/10 Area encompasses 3.62 – the provisionally excluded Cultural Resource Areas encompass approximately 0.6 square miles)

### *G. Transportation Conformity*

Transportation conformity is required by CAA section 176(c). Our conformity rule (40 CFR part 93, subpart A) requires that transportation plans, programs, and projects conform to state air quality implementation plans and establishes the criteria and procedures for determining whether or not they do so. Conformity to a SIP means that transportation activities will not produce new air quality violations, worsen existing violations, or delay timely attainment of the NAAQS or the timely achievement of interim milestones. However, if the EPA determines that a SIP demonstrates that motor vehicle emissions are an insignificant contributor to the air quality problem, states are not required to establish motor vehicle emissions budgets or perform a regional emissions analysis for transportation conformity purposes.<sup>84</sup>

In section 6.1.2 of the Plan, the GBUAPCD provides its argument for why motor vehicle emissions are insignificant contributors to the PM<sub>10</sub> problem in the Owens Valley PM<sub>10</sub> NA. First, the District noted that motor vehicle tailpipe emissions and re-entrained roadway dust contribute just 1.4 percent of the 2016 PM<sub>10</sub> emissions. The District also observed that the State estimates the annual population growth (about 0.7 percent) and increase in vehicle miles traveled (about 1.2 percent annually) and argued that it is unlikely that “these emissions would grow to such an extent as to cause a NAAQS violation in the future.” Finally, the District pointed out the absence of measures in the SIP that control motor vehicle emissions. In light of these factors, the EPA concurs with the District’s conclusion that motor vehicle emissions are insignificant contributors to the PM<sub>10</sub> problem in the Owens Valley. Accordingly, the GBUAPCD is not

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<sup>84</sup> 40 CFR 93.109(f).



required to establish motor vehicle budgets in this plan or to perform regional emissions analyses for transportation conformity.

### **III. Summary of the EPA's Proposed Action**

The EPA is proposing to approve the Serious area 2016 PM<sub>10</sub> Plan submitted by the State of California for the Owens Valley PM<sub>10</sub> nonattainment area. Specifically, the EPA is proposing to approve the 2016 PM<sub>10</sub> Plan with respect to the CAA requirements for public notice and involvement under section 110(a)(1); emissions inventories under section 172(c)(3); the control measures in Rule 433 under section 110(k)(3), as meeting the requirements of sections 110(a) and 189(b)(1)(B); RFP and quantitative milestones under section 189(c); the contingency measure in Rule 433 under section 172(c)(9); and demonstration of attainment under section 189(b)(1)(A). The EPA is also proposing to approve the State's request for an extension of the attainment date to June 6, 2017 pursuant to CAA sections 188 and 179.

### **IV. Statutory and Executive Order Reviews**

Under the Clean Air Act, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable federal regulations. 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, the EPA's role is to approve State choices, provided that they meet the criteria of the Clean Air Act. Accordingly, this proposed action merely proposes to approve State law as meeting federal requirements and does not impose additional requirements beyond those imposed by State law. For that reason, this proposed action:

- is not a "significant regulatory action" subject to review by the Office of Management and Budget under Executive Order 12866 (58 FR 51735, October 4, 1993);

- does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 et seq.);
- is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 et seq.);
- does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Public Law 104-4);
- does not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);
- is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);
- is not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the Clean Air Act; and
- does not provide the EPA with the discretionary authority to address disproportionate human health or environmental effects with practical, appropriate, and legally permissible methods under Executive Order 12898 (59 FR 7629, February 16, 1994).

In addition, the SIP is not approved to apply on any Indian reservation land or in any other area where the EPA or an Indian tribe has demonstrated that a tribe has jurisdiction. In those areas of Indian country, the rule does not have tribal implications and will not impose substantial direct costs on tribal governments or preempt tribal law as specified by Executive Order 13175 (65 FR 67249, November 9, 2000). We intend to offer to consult with local tribes during the comment period.

**List of Subjects in 40 CFR Part 52**

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Particulate matter, Reporting and recordkeeping requirements.

**Authority:** 42 U.S.C. 7401 *et seq.*

Dated: December 1, 2016.

Deborah Jordan,  
Acting Regional Administrator,  
Region IX.

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